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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/801,897	03/09/2001	Naoshi Matsuo	010280	2593

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EXAMINER

MICHALSKI, JUSTIN I

ART UNIT	PAPER NUMBER
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2644

DATE MAILED: 04/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/801,897

Applicant(s)

MATSUO, NAOSHI

Examiner

Justin Michalski

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03/09/2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                                                                                 |                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                                                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                                            | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>06/08/2001</u> . | 6) <input type="checkbox"/> Other: _____                                                |

## DETAILED ACTION

### *Priority*

1. Receipt is acknowledged of papers (Japanese Appln. No. 10-255546, filed 9/9/1998) submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.
2. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in PCT on 4/28/1999. It is noted, however, that applicant has not filed a certified copy of the PCT/JP99/02312 application as required by 35 U.S.C. 119(b).

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 7, and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Shields (US Patent 5,196,755).

Regarding Claim 1, Shields discloses a speaker apparatus comprising (Figure 4): a transducer (transducers 1) for transducing an input electric signal into mechanical vibration; and a diaphragm (flexible layer 12) for transducing the mechanical vibration into a sound signal; wherein a single diaphragm is provided with a plurality of the transducers (flexible layer 12), and the single diaphragm is provided with a plurality of

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independent signal control points (Shields discloses phasing the array of transducers, i.e. control points) corresponding to the respective transducers.

Regarding Claim 7, Shields further discloses the diaphragm (layer 12) extends over an entire surface of a desired speaker array and is provided with the transducers (transducers 1) whose number is the same as the signal control points of the desired speaker array (When phasing the array to focus the beam the number of transducers in the array will inherently become the number of control points) (Column 3, lines 62-64).

Regarding Claim 14, Shields discloses a speaker apparatus (Figure 4) comprising: a transducer (transducer 1) for transducing an input electric signal into mechanical vibrations; and a diaphragm (flexible layer 12) for transducing the mechanical vibration into a sound signal; wherein a single flat-panel diaphragm (flexible layer 12) is provided with a plurality of the transducers (array of transducers 1); and the single flat-panel diaphragm is provided with a plurality of independent signal control points corresponding to the respective transducers (transducers 1).

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2, 3-5, and 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shields as applied to claim 1 above in view of Katsumi et al. (Japanese Patent Publication 3-159500).

Regarding Claim 2, Shields discloses an apparatus as stated apropos of claim 1 above including an array of piezoelectric transducers and discloses a method of phasing the array (i.e. causing interference by delaying the sound signal from one transducer to another) to adjust the transmission of sound (Column 3, lines 62-64). Shields does not disclose being able to stereophonically reproduce a plurality of channels by the single diaphragm. Katsumi et al. discloses (Figure 2) an array of speakers along with delay elements (6) and a delay amount controller (7). Katsumi et al. further discloses by controlling the delay quantity of the sound waves from each of the speakers (i.e. transducers) several image sound sources can be produced (i.e. stereophonically in order to produce a sound image) (Abstract and Constitution). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the method of phasing the array as disclosed by Shields with the method of delay as taught by Katsumi et al. in order to create a stereophonic signal from a diaphragm and increase feeling for the sound image being made.

Regarding Claim 3, Shields discloses an apparatus as stated apropos of claim 1 above including an array of piezoelectric transducers and discloses a method of phasing the array (i.e. causing interference by delaying the sound signal from one transducer to another) to adjust the transmission of sound (Column 3, lines 62-64).

Shields does not disclose causing an interference between signal outputs from the plurality of the signal control points so as to localize a sound image in an arbitrary point. Katsumi et al. discloses (Figure 2) an array of speakers along with delay elements (6) and a delay amount controller (7). Katsumi et al. discloses that the delay elements and controller can be used to generate a focus point of plural sound waves and to shift the position of the focus point. Making it possible to make plural moving sound images. (IDS partial translation, Page 3 (685) top left col. Lines 1-19). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the method of phasing the array as disclosed by Shields with the method of delay as taught by Katsumi et al. in order to create a localized sound image thereby producing a higher quality and more encompassing sound signal for a listener.

Regarding Claim 4, Shields further discloses wherein the interference sound signal includes information for controlling a sound pressure distribution so as to control directionality of the sound image (Shields discloses phasing (i.e. controlling sound pressure distribution) the array to focus (i.e. control directionality) the beam at a specified volume) (Column 3, lines 62-64).

Regarding Claim 5, Katsumi et al. further discloses delay elements 6 and controller 7 which adjust the phases (i.e. frequency) of the sound waves from each of the speakers at the position 8 (i.e. listening position) to create a sound image (Abstract and constitution).

Regarding Claim 8, Shields further discloses the diaphragm (figures 3 and 4, layer 12) extends over an entire surface of a desired speaker array (1). Katsumi et al.

further discloses delay elements 6 and controller 7 are used to control the phases of the sound waves to produce a image for a listener at position 8 which are produced and transmitted by localized speakers (i.e. transducers 5).

7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shields as modified as applied to claim 3 above, and further in view of lida et al. (US Patent 5,579,396). Shields as modified discloses an apparatus as stated apropos of claim 3 above but does not disclose surround stereo system. lida et al. discloses a speaker apparatus (Figure 19) where an image to be localized can be arranged around a listener to achieve a surround stereo system (Column 1, lines 6-14). lida et al. further discloses that sound images can be localized at positions LB and RB (i.e. signal control points) (Column 24, lines 13-19). It is well known in the art and would have been obvious to one of ordinary skill in the art at the time the invention was made to include a left and right rear transducer in order to produce a surround stereo system to localize sounds around a listener as disclosed by lida et al.

8. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shields as modified as applied to claim 3 above, and further in view of lida et al. (US Patent 5,579,396). Shields as modified discloses an apparatus as stated apropos of claim 3 including a diaphragm which extends over an entire surface of a desired speaker array. Shields as modified does not disclose the sound images are localized in positions of the signal control points of the desired speaker array. lida et al. discloses a speaker

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apparatus (Figure 19) including a speaker array (LF, RF, LB, RB). Iida et al. discloses that sound images can be localized at positions LB and RB (i.e. signal control points) (Column 24, lines 13-19). Iida et al. further discloses the apparatus can produce an image to be localized can be arranged around a listener to achieve a surround stereo system (Column 1, lines 6-14). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the sound images to be localized in positions of the signal control points in order to produce an image to be localized to achieve a stereo audio effect as disclosed by Iida et al.

9. Claims 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shields as modified as applied to claim 3 above, and further in view of Haruo (Japanese Patent Publication 61-61598).

Regarding Claim 9, Shields as modified discloses a speaker apparatus as stated apropos of claim 3 above but does not disclose transducers being arranged in a peripheral portion of the diaphragm. Haruo discloses an acoustic device comprising a diaphragm (7) and transducer elements (3 and 4). Figure of Haruo discloses transducer elements (3 and 4) arranged in a peripheral portion of the diaphragm (7). Haruo further discloses that the transducer elements can be adhered on the front panel with an adhesive (Abstract and constitution). Therefore, it would have been obvious to one of ordinary skill at the time the invention was made that transducers can be arranged in a peripheral portion of a diaphragm in order to control the placement of the transducers on the diaphragm as disclosed by Haruo.



Regarding Claim 10, Haruo further discloses the diaphragm being formed of a transparent material (Haruo discloses diaphragm is a cathode ray tube which is inherently a transparent material) (Abstract).

Regarding Claim 11, Haruo further discloses the diaphragm is a cathode ray tube which is well known in the art to be used as a monitor display.

10. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shields as modified as applied to claim 11 above, and further in view of Wolfe (US Patent 5,521,765). Shields as modified discloses a speaker apparatus along with a cathode ray tube as stated apropos of claim 11 above but does not disclose the transparent material reducing a reflection of light and blocking electromagnetic waves. Wolfe discloses a filter to reduce glare (i.e. reflection) of a cathode ray tube and enhance the image contrast (Column 1, lines 9-12). Wolfe further discloses the filter attenuating light (i.e. blocking electromagnetic waves) from the video image as it is transmitted out of the screen to improve the contrast of the picture (Column 1, lines 20-24). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a filter on the cathode ray tube as disclosed by Shields as modified in order to reduce glare and improve contrast as taught by Wolfe.

11. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shields as applied to claim 1 above in view of Hornsari et al. (Japanese Patent Publication 9-212270). Shields discloses a speaker apparatus as stated apropos of claim 1 including

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being made of piezoelectric elements (Column 1, line 18). Hornsari et al. discloses a computer keyboard comprising speakers 26a and 26b. Hornsari et al. further discloses the speakers can be of a piezoelectric type and used to generate stereo sound directly from the keyboard (IDS partial translation, Page 3 col.4 lines 20-45). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made that the a speaker apparatus could be integrated with a keyboard as disclosed by Hornsari et al. to generate stereo sound directly from the keyboard to the user.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Justin Michalski whose telephone number is (703)305-5598. The examiner can normally be reached on 8 Hours, 5 day/week.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Isen can be reached on (703)305-4386. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JIM

  
XU MEI  
PRIMARY EXAMINER